



# HUMANITIES NETWORK

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## Technology and Human Values: Policy Questions

By Bruce Sievers  
Executive Director, CCHPP

The "Frankenstein Myth," a theme of recurring popularity in literature and entertainment, provides a symbolic unifying theme for this addition of Humanities Network. The monster story functions as a metaphor for a dilemma faced throughout contemporary society: the problem of controlling technology. Questions that surround this deceptively tangled problem of technological control, we soon realize, are not themselves soluble through expert or scientific advice; rather they turn out to raise more fundamental questions of human values and social policy.

The Frankenstein story as a myth contains both realistic and fantastic elements, as does the problem of technology. Clearly we are threatened by unanticipated consequences of certain technological developments, such as radiation from nuclear fission, the creation of exotic new potential diseases resulting from genetic research, even as some argue, such dangers as long term diminishment of intellectual capacity through a passive and all-pervasive communications network. Yet the comfort and ease which we enjoy in living conditions, extended life spans, and incredible expansion of access to information, have only been made possible through the enormous technological advances of the last two centuries. Overt attacks on science and technology often seem overdrawn. Yet the unease remains.

Concerns about subtle and long-range impacts sometimes seem abstract until we realize that among the most critical and complex contemporary policy issues are those directly bound up with the use and

Continued on Page 9

*"No social, human, or spiritual fact is so important as the fact of technique in the modern world, and yet no subject is so little understood."*

---Jacques Ellul

## Reflections on Autonomous Technology

By Langdon Winner

Dr. Winner is Associate Professor of Political Science and Technology Studies at Massachusetts Institute of Technology. These remarks were taken from an address delivered at a seminar on 'Autonomous Technology in Humanist Perspective,' sponsored by the Center for the Humanities at the University of Southern California.

The wonderful 1930s motion picture "Dinner at Eight," a tragicomedy about the personal and social misfortunes of America's uppercrust, ends with a surprising dialogue. After a long series of interwoven calamities—bankruptcy, failed careers, suicide, heart attack, and the like—have decimated the lives and fortunes of the leading characters, all of the guests gather in the final scene for a fancy, high society dinner. The last thing we see is a brief conversation between Marie Dressler, playing a horribly obese but fabulously expressive old actress whose best years on the stage came decades earlier, and Jean Harlow, cast as a voluptuous dumb blonde whose greatest talents consist in pouting, preening and cheating on her business tycoon husband (played by Wallace Beery). Throughout the movie Jean Harlow has been involved in a program of reading that she hopes will make her a truly "cultured" lady. As the two actresses walk together through the doors to the dining room, Harlow announces out of the blue:

"Ya know, I've been readin' this book by a guy who says that *machines* are going to take over every profession." Marie Dressler stops in her tracks, raises her darkly painted eyebrows, looks Harlow up and down and exclaims: "Oh, my dear you'll never have to worry about that!"

My invitation to attend this conference comes by virtue of the fact that I have written a book, *Autonomous Technology*, which argues that there is something to worry about—or at least ponder seriously—in our relationship to things technical. By technology I mean not merely the phenomenon of automation that Jean Harlow was reading about, but the whole complex of apparatus, techniques and large-scale systems that comprise modern material culture. My starting point is the simple observation that over the past century and a half the idea that "technology is out of control" has become a surprisingly common theme in Western thought. It is a conclusion expressed in various ways in the works of many artists, poets, social scientists, journalists, and even scientists and technical specialists themselves. The special fascination of this idea is that it directly contradicts our traditional understanding of what technologies are and ought to be; namely, our settled conclusions:

1. that men know best what they themselves have made,
2. that the things men make are under

## CHARMAN'S COLUMN

This final column by retiring Chair, Dr. Martin Chamberlain, is an excerpt from the foreword to the Council's recently published report on its first five years of activity.

Dilemmas which face modern society seem at times to be so complex and technical as to defy solution. "Solutions" often turn out to be more detrimental than the original problem. What is called for, it sometimes seems, is not more sophisticated forms of social engineering but rather new visions—new ways of thinking about society's problems.

The California Council for the Humanities in Public Policy was initiated in an attempt to foster new visions of a particular sort. Created in 1974 by a small group of Californians in cooperation with the National Endowment for the Humanities, the fledgling Council assumed an imposing task: to encourage the disciplines of the humanities to address the difficult practical problems of public life.

The planning group began with the ambitious assumption that insights of the historian or ethicist might be as important as those of the engineer or economist to the solution of social policy questions.

CCHPP-sponsored programs have brought to millions of Californians a better and deeper understanding of public policy issues. Projects have had a direct impact on the thinking of policy-makers who have found themselves otherwise too enmeshed in day-to-day crises to take time for broader reflection. Humanists ranging in disciplines from classics to contemporary literature have gained a better acquaintance with the realities of contemporary issues and a better

Continued on Page 2



From "Worlds Beyond" Edited by the New Dimensions Foundation;  
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Next deadline for receiving proposals, October 30  
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A rough compromise has been fashioned between the champions of Recombinant DNA techniques and their opponents. Briefly, the compromise recognizes three basic types of experiment: First, those experiments people think are *safe* are not to be restricted. Second, those experiments people agree could be quite *dangerous* are not to be done. Third, intermediate and disputed cases may be performed, but only with suitable physical and biological safeguards. This tripartite division is expressed in a clumsy set of NIH regulations and procedures affecting work to which NIH has access. Research and development of RDNA by drug companies, I believe, is not much regulated.

The compromise is a rational one. It springs directly from traditional libertarian principles as articulated by John Stuart Mill:

...the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number is self-protection. (*On Liberty*)

Following Mill's principles, the debate centered on the problem of protecting the public. There was not much disagreement over what sorts of things should be regarded as harmful — virulent rogue pathogens and disrupted ecologies dominated the more pessimistic scenarios. There was a lot of disagreement over the likelihood of harm, the nature of countervailing benefits (especially unimplemented scientific discoveries), their likelihood, and the provenance of Mill's principles.

The argument centered on possible dangers and benefits, and our rights in connection with them, because arguments on these grounds are impeccably rational. They are accepted parts of our ethos and have force. The arguments could be used by the public to claim that scientists have certain obligations to it.

Reading this debate got me to thinking, which is my job, that the debate presumes both a too narrow conception of ethics and a too narrow conception of science to fairly represent the issues raised by this new technological turn.

That a broader conception of ethics is needed can be seen if we look at technological development historically and see that it has an evolutionary quality — episodic, of various causes, surprising, generative. RDNA is a point where the evolution of technology and natural evolution meet, if they did not already meet in pigeon and potato breeding. The effects of rational and technological thought expressed in products are beyond the predictive and controlling aspects of present rationality. Different technologies create forms of life so incomparable that they cannot be assessed in terms so narrow as harm and benefit.

Do we lead a better life now than our grandparents, or just a different one? The Indians and buffalo were greatly reduced in circumstances by railroads and rifles, dams, barbed wire fences, oilfields, and joint stock corporations. Was the world made better by these changes? Were the Indians and the buffalo, before they were reduced, more miserable than we are? Is television an advance over radio? Am I better off with Captain Kirk than with Gene Autrey? Will Captain Kirk of the Starship Enterprise be happier than was Captain Bligh of the HMS Bounty? Would freeze-dried food have saved Captain Bligh?

Would Sisyphus, rolling his rock up the hill and watching it thunder down again, benefit from a longer life or maybe some steroids? Perhaps, with an adjustment in a gene, he would find life more meaningful. Are single room occupancy hotels on New York's Upper West side, or some nursing homes, good places to live because they have

# Introduction to a Public Science

By Andrew Jameton, Lecturer, Bioethics, USF Health Policy Program.  
Presented at a Public Forum, "Science and Public: Recombinant DNA," sponsored by the Health Services Research Division, Stanford University School of Medicine

electricity and television when they have "neither light nor love nor help for pain?" Will our lives be improved because the Niemann Marcus store will replace the City of Paris building?

RDNA is a new technic. I am not suggesting that it is a bad thing because it is new, or even that it is a bad thing. Not only does it seem scientifically intriguing, it may have some surprisingly productive benefits. I am suggesting that harms and benefits is too narrow a mode of judgment to respect its potential. A broad range of technological, social, and ethical values ought to be considered in overseeing its development — integration flexibility, centralization,

beauty, liberation, etc.

New technics have the power of changing our conceptions of ourselves and our relationships with each other. Such deep changes cannot be represented in a rational calculus of harm and benefit. We need to consider issues, so broad, so qualitative, and so vague that we normally avoid them.

The second idea that the RDNA debate suggests for me is that an ethic concerned with issues more various than autonomously assessed harms and benefits would be well supplemented with a different kind of science — one that accepts broader conceptions of rationality than that accepted by the

current technological orthodoxy.

The word "science" is ambiguous. On one hand, it refers to the scientific-technological enterprise — the institutions, instruments, experiments, and results of biology, chemistry, physics, etc. On the other hand, it refers to any reasonable way of finding out something. By being ambiguous, the word "science" subliminally suggests that the institutions of chemistry, biology, physics, etc., are the reasonable ways to find things out.

A different science — one I would like to see more of — would have a number of features, among them: First, priorities would be set by social justice, an attempt to integrate social organization and technology — these themes would be regarded as basic to explanation, rather than the reductionist details generated by normal science.

For example, I feel I have learned more about cancer from epidemiologists than from geneticists. The problems of world starvation are more in delivery of food, not food chemistry, nor even new breeds of plants. Questions of how to transport people quickly and efficiently without destroying neighborhoods would be regarded as a deep natural mystery.

Second, social and moral issues would be more often linked with the substance of traditionally scientific issues. Thus, one could take more seriously studies of environmental effects on the rate of cancer growth, or the relationship between moral conflict and stress, or how to obtain real information from patients' subjective reports of their symptoms.

Third, humanities and values questions could be studied insofar as it is possible to study them with evidence and empirical studies. What seem to be fragile and vague questions from a technical point of view have real meaning and some empirical content. Questions like these: Who is happy and unhappy? To what extent does doing moral wrong make people happy or unhappy? Can love ever last? What expressions of aggression are inevitable? Must the poor be always with us? What, in people's judgments, makes their lives meaningful?

Fourthly, in order not to regard these as second-class questions, we need to develop nontechnological conceptions of evidence and reasonable argumentation. High-technology studies, statistics, and the like are not the only reasonable ways of finding things out; indeed, they are not always reasonable. Rigor is only valuable in a certain paradigm. And, if you step outside that paradigm, you can get valuable information in other ways.

Lastly, we need a better understanding of our orthodox scientific institutions — who really benefits from them. Their ideological function, their role in production, and the social relations generating their results.

Some of the research done by the National Commission for Protection of Human Subjects in preparing their position on clinical studies integrates social and scientific issues in a way that could be a paradigm for the kind of science I am looking for.

I am not offering these ideas as something I think you have to accept — these are not arguments from force. They are simply suggestions that if you work on them a bit, clean them up, they may be fruitful. John Stuart Mill presumed that in some important way we are all separate, and our tastes and values ultimately irreconcilable, except in some calculus of personal judgments about our welfare. My suggestions presume that beneath a veneer of obvious differences, we have more values in common and a deeper rationality than is usually recognized. In order to find appropriate political solutions to the problems of new research, I think we need to look to conceptual changes. The RDNA compromise turned out poorly because we could neither debate nor discover what we needed to know. \*

## CHAIRMAN'S COLUMN

Continued from Page 1

understanding of the interests and insights of adult audiences.

The first five years have also been a period of learning. Experiences with diverse policy topics, formats, humanities disciplines, and program settings have brought to the Council a greater appreciation of effective modes of interchange between humanists and policy-makers, a grasp of important demands of media programs, and a clearer perception of public concerns and needs. The CCHPP program for 1979 reflects this learning process, and we will continue to modify and guide our program in response to the encouragement and criticisms of the public.

In the spring of 1975 the Council chose a theme which seemed to tie together many of the extraordinarily diverse ideas and suggestions received during the planning period. The theme, "The Pursuit of Community in California," catching the sense of quest for roots and common purpose in the state, seemed to strike a responsive chord in every region and social group; indeed it has served so well that the Council continues to use it as an overall focus for the state program in the current grant period.

The first grants to community groups and academic institutions were awarded in May, 1975. Since that time, the Council has awarded a total of 247 grants for a sum of \$2,002,723 for projects involving a vast number of groups and individuals in California.

The Council itself has grown and expanded. From an original nine members designated by the NEH, it now numbers 20, and the membership reflects the stimulating diversity of the California population. Nominations for public and academic members are continuously solicited from individuals and groups in the state; members are chosen for their excellence in their professions, demonstrated leadership abilities, commitment to the demanding work of the Council, diversity of background, and breadth and depth of experience.

In 1976, with the passage of the new Congressional authorizing legislation for the NEH, the state councils were given greater latitude to determine their own goals and areas of grantmaking. As a consequence, the Council created new grant categories in

Local and Cultural History, Programs for the Occupations, Multi-disciplinary Seminars, Innovative Public Programs in the Humanities, and Humanities Projects in Public Radio and Television. Currently, exciting projects in each of these categories are reaching new constituencies and exploring new topic areas with the distinctive insights of the humanities.

What might the overall impact be said to be after these first years of Council-sponsored public activities in the humanities in California? The Council, of course, takes pride in the awards won by CCHPP-funded radio and television programs; frequent reports of success from public groups, policy-makers and humanists; good attendance figures; favorable press notices.

But the most meaningful, somehow, are the individual vignettes which express what the late Charles Frankel described as the essence of the humanities, "a curious combination of involvement and detachment; of the search for scientific objectivity and irrepressible personal idiosyncrasy; of piety towards the past and the critique of the past; of private passion and public commitment." A news reporter who avows that her entire approach toward reporting has changed as a result of her contact with the humanities; a labor official who feels he has suddenly discovered the real roots of his personal and professional past after a summer humanities seminar; a statewide citizens group which now regularly includes humanists in the planning and development of its major programs as the result of an initial humanities grant; and a high school student who has begun to read seriously for the first time in her life after her experience in a "Humanist-in-the-Schools" program — these are the results that make the program worth doing, and they are the kind of results we will continue to strive for in the coming year.

It has been my privilege to shepherd these activities during the past two years, working closely with our gifted Executive Director, Bruce Sievers. These years have been demanding ones for me, but always stimulating and rewarding. Now I have the pleasure of turning over the leadership to Aileen Hernandez, the incoming Council Chair. I see a bright future for the Council and its outreach under Aileen's direction.

Merton A. Chamberlain \*



The problems we are discussing here are enormously complex. As do so many of my other nonscientific colleagues, I feel so overwhelmed by these problems that I had to sit back and think to myself how I could come to grips with something here.

It is perfectly evident that there are many specific problems that need analysis in connection with the results of a particular piece of recombinant DNA research — in connection with regulations, with political processes, with estimating dangers, and with questions about moral obligations that exist in this or that respect. These are all extremely important in their way, but it seemed to me that there was a larger context that I had to come to terms with. This is what you might call a philosophical context, in some very broad sense.

I would begin with the fact that recombinant DNA research is portrayed to us not only as opening important new kinds of knowledge, but also as promising immense benefits because of the profound impact that the techniques can have in changing or reengineering the genetic material. And that starts the debate. It seems to me we should face a basic truth: namely, that any profoundly powerful knowledge or techniques that enable us to change radically the conditions under which we live must be double-edged.

That is, if we are able to change profoundly the conditions of life, then we will have the power to do so disadvantageously as well as advantageously. In general, the greater the potential for good, the greater the potential for evil. It is naive to think that

minds into compliant minds, or for producing profit at the expense of long-range damage to human beings or to the environment. So whatever the localized or limited precautions that we may take in the way of regulations to prevent or to limit the disadvantageous use of recombinant DNA, I think we must, if we are realistic, expect that there will be much good that comes from it and also much evil.

And we must realize that in the long run, and not too long at that, we are unable to specify where or when or how much of the good and of the evil will occur. Nor can we specify what the overall balance would be, if that phrase has any meaning when we're dealing with such large issues. We will ameliorate or resolve some problems, and we will produce some others; but we don't know

would have predicted that the basic hygiene and other medical techniques that were developed in the late nineteenth and early twentieth centuries would have among their consequences the radical change in the population of the world, and radical social isolation and tension. As many or more human beings are suffering and starving now because there are that many more human beings than there were when we started out with the medical revolution.

Who is predicting the main course of our economic affairs today in this country or the world? Nobody, as far as I can see. Who can predict the main course of political affairs or even of important political moves that are made today? What will be the overt outcome in ten years? We have seen programs and politics initiated in the Thirties and Forties, and we've seen the very same people who initiated them discover that the outcome was different from what they had expected.

Who can predict the outcome of military ventures? The fact is that when it comes to the larger perspective in any of the major areas, history gives us no basis for optimism. We have no basis, even now, in our theoretical knowledge for supposing that we know or can control...An earlier speaker talked of using scientific research to effect our purposes. It seems to me that the point that one must keep in mind is that in these major enterprises we don't effect our purposes. We have purposes, and we act upon them, and things happen that often turn out not to be what we purposed. Or, even when they are what we purposed, much else happens that we hadn't expected that is also important. That's one kind of ignorance.

Another kind of ignorance that is more profound is, even if we do know what the overt outcomes will be, we are unable to assess the significance of them to us when they happen. We can't assess the meaning of them, because as we move along in time into a new world, things have a different meaning to us, a different significance. We are changed people.

A simple model of this is the growth of a child into maturity. The child who looks forward to the overt outcomes would probably plan a world in which everything was ice cream and toys. But on reaching the age of 25 and 30, we find that kind of world has a very different meaning for us, and we don't value it in the same way. People in the late 19th and 20th century looked ahead to science and technology proliferating and coming to be amazingly productive and successful enterprises. But what they didn't and couldn't take into account was what it would be like to live in that world, how it would feel, what the significance of those outcomes would be. In this case, the outcome was realized in more or less the way it was expected. Science and technology have grown, but the attitudes we have, and the feelings about them, are surely very different from what a late 19th century optimist would have thought.

So there are these two basic ways in which we are ignorant. We can't predict the out-

comes or control them in major respects, and insofar as we can, we don't know what the value or significance of them will be. I ask, "What are the implications of this, especially in regard to the recombinant DNA controversy?" One thing we might presume would be — perhaps we shouldn't venture into such treacherous waters — that if we were to decide not to put our priorities into recombinant DNA but into some other very promising areas of scientific research, then if we make a good choice we will achieve a breakthrough in some other area. And when we achieve breakthroughs in basic scientific knowledge the practical implications are there and we will be back in a problem whose structure is the same as in the recombinant DNA controversy. The language will be different, but the substance of the issues will be the same. We could try to stop science entirely, but that seems to be something that is contrary to the thrust of our whole culture today and, in addition, to do so would insult values that have been basic to modern European civilization for so long. The question is, if we stay away from science, are we so clearly on a road that will *not* lead to catastrophe? Do we know that by going ahead with recombinant DNA or scientific inquiry we are moving to catastrophe or to danger, and if we don't that the world is going along safely? That would be naive, considering what we have seen of history.

So, on the basis of these presumptions, I would say that recombinant DNA research should go on — not because scientific research, the search for truth, is an absolute overriding value. Of course it isn't, as has been pointed out; in many ways we regulate it as soon as we see that the implications are dangerous in specific ways for human beings or even for nature. So of course we will and should have regulation, and this introduces many, many complicated problems. There is no reason whatsoever why science *should* have an absolute commitment from society. We should struggle to find some balance, and that means that lawyers and legislators and the public and ethicists will be frustrated and impatient. Of course, the others will be impatient with the scientists — that's the way it goes, that's part of the process and that's something we have to accept.

The only thing I would want to stress is that, while we have to do these things, we have to recognize that in the longer run, we are not actually in control of the situation. We don't know how much good will come and we don't know in what way. We don't know how much evil will come and we don't know in what way. To use a phrase that I heard used this morning in another connection, "It's a scary situation." Well, of course it's a scary situation!

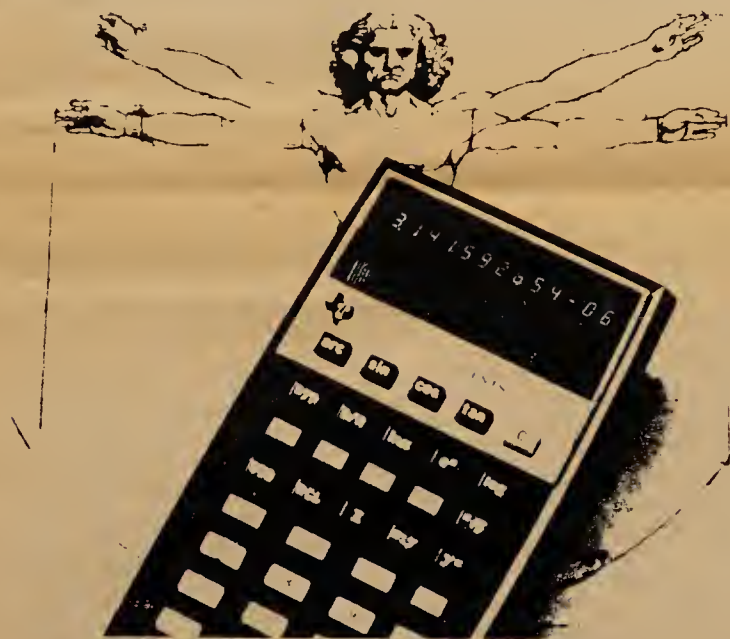
But then that isn't new either, because if you go back to other times and other cultures, what do the myths and stories of people in all times tell us? They tell us that thoughtful people have realized that this whole enterprise is very scary and very precarious. People everywhere and in all times have been concerned with appeasing the gods; people who have had any thought for what it is to live have always done this. And we have our forms of appeasing the gods — we do planning and so forth. It is important to do these things because they are part of life and there are consequences in the immediate future that sometimes make life more humane.

But in the larger context, it does seem to me that we should not engage in specific analyses with the idea that this one has the solution or that one has the solution. We should look for the right way but with a somewhat more tempered and, if I may say so, a more humble approach. We should know that we're walking a tightrope and that this is a very exciting thing. But it's a very scary thing, and it's not new. It's not new with recombinant DNA, and it's not new with life, either.

# Complexities and Ignorance

By Herbert Fingarette,  
Professor of Philosophy, University of California, Santa Barbara  
Presented at a colloquium,

"The Recombinant DNA Controversy, Public Policy at the Frontier of Knowledge,"  
Sponsored by NEXA, the Science-Humanities Convergence Program,  
San Francisco State University



From "SILICON VALLEY: Paradise or Paradox?"  
Sponsored by the Pacific Studies Center

any technique or knowledge that can be used to produce profound change for the better can somehow have a built-in immunity to being used for ill.

Now, much of the debate about the dangers of recombinant DNA has centered around the potential evils that are due to accidents or negligence in the course of the research. That is an important part of the problem, but the potential for evil in any profoundly powerful technique lies not only in the misfortunes or the negligence of people who are basically well intentioned and conscientious. The potential also lies in the prospect that these techniques will be used by those who are not well intentioned, whose views or values differ radically from the ones that we have. These techniques could be used by people who are amoral, who are unconcerned, or reckless, or even by those who are, in some very plain sense, evil. It's surely not an improbable fantasy to think that there are scientists who would cooperate and people who would use this cooperation for the purpose of mass destruction — abusing powerful techniques for that end, or for establishing tyrannies, or for remaking

what, when, where, and how much. I take that as basic if we move beyond the very specific localized kinds of predictions and problems of control and regulation. So it seems to me that we have to start from the fact that the context is fundamentally one in which we have to recognize our ignorance of what is to come and our ability to control it in significant respects. We have to recognize our basic humility, you might say, arising out of our ignorance.

I would like to talk about the *kinds* of ignorance that we have and spell them out just a little bit more. One kind of ignorance that we have is obvious and very important, but we don't like to face it. We don't really know what the obvious outcome of these large-scale activities and enterprises will be. I have in mind a variety of situations that one can easily generate more of at will. For example, who would have predicted as an overt outcome of World War II that the defeated nations—nations in ruin, Germany and Japan—would, largely as a result of that defeat, come to be the two bright, prospering powers in the world, as contrasted with most of the victor nations? Unpredictable. Who



## RENE DUBOS

Professor Emeritus of Microbiology and Experimental Pathology, Rockefeller University

...In the year 1933 the city of Chicago celebrated its one-hundredth anniversary with one of the most spectacular world's fairs that was ever held. It was called The Century of Progress. The whole theme of the fair was that progress, improvement, betterment of human life, were *all* due to scientific technology. I secured a guidebook to the fair, and I have kept it all these years because it's so revealing of the state of mind that prevailed all over the Western world in the early 1900s until the 1940's. The guidebook to the fair described all the marvels of scientific technology and then continued, "Human beings, all societies, will fall in step with the creations of scientific technology." And the writer of the guide was so enthused with his theme that he had a final chapter with a title that read as follows: "Science Discovers, Industry Applies, Man Conforms." I dare state that nobody would write that phrase today. It would be considered absolutely unacceptable to state that man must conform to the dictates of technology. And it seems to me that this is where an immense change has begun to take place in public consciousness. Intellectually, at least, we have completely reversed our position. We no longer believe that man must conform to technology; we believe that we must rethink technology to make it conform to all the natural forces, including the forces of the human spirit. And in a way the art of living will consist in attempting not to abandon technology, because we will not do it—even those who think we should will not try to do that—but to make it compatible with human life and with the natural world.

From: "Speaking of My Life: The Art of Living in the Cultural Revolution," Harper & Row, San Francisco, 1979; by permission of the Far West Institute

## MARC LAPPE

Chief, Office of Health, Law and Values, Department of Health, State of California

...There is no such thing any more as a piece of scientific knowledge that can be guaranteed to be free of application. While the stated goals of basic recombinant DNA research are remote from human concerns, industrial applications of those very results are inseparable from, and will undoubtedly transform, human society. The same techniques that basic researchers are using to study life simultaneously confer power on those who would control it, and whose value orientations, I should emphasize, are likely to be substantially different. Moreover, no scientist can study a recombined DNA organism without changing the genetic potential of that organism which they produce. In their very innocence, the techniques involved in that change invite technological application.

In my view, the basic researcher who lives in a rarefied, and sometimes heady, atmosphere of free inquiry cannot imagine how attractive his work is to those who seek power. The very disinterest that pure scientists avow in the application of their work, and which indeed is essential for the conduct of pure research, virtually insures that there will be others who usurp it and, most importantly, that there will be no conflict from the basic scientists if the work is abused.

The public has given, and I hope will continue to give, researchers the trust that they will advance and diffuse new knowledge; but to deserve that trust researchers must focus their objectives on those internally directed goals. That trust is broken every

time a scientist accepts an outside contract with a drug firm or every time public funds are used to support entrepreneurial activities that may not coincide with your values and your objectives and your ends for applications of research.

The real goals of recombinant DNA research, and the ends which every member of the initial Asilomar conference sought, were to advance the state of knowledge about the genetic stuff of life, and to refine our understanding of the elegance and sophistication of the way in which genes work—not to sell incomplete technologies to drug or oil companies intent on reaping a fast profit from recombinant organisms fresh out of the laboratory.

It is indeed from this last premature step that I think public health risks will come. I believe the state and the public should scrutinize the desirability of regulation. Finally, the one line and avenue of regulation that I would propose for discussion would be the idea of declaring recombinant DNA organisms to be a very special national resource. This resource could be held in public trust, and be banked and shared by basic scientists everywhere for increasing the breadth and depth of our knowledge base.

From "The Recombinant DNA Controversy" NEXA, SFSU

## ETHAN SIGNER

Department of Biology, Massachusetts Institute of Technology

...Let me read you a quote. It comes from Professor James D. Watson who is a most eminent scientist. He made this statement four or five years ago while talking about the issue of cloning, which is another genetic technique that can be used for various things. Jim was very concerned about the danger of cloning, although he does not work on cloning. He is very much a proponent of recombinant DNA research, which his laboratory does work on. I think this quote, although it concerns cloning, holds equally well for recombinant DNA research. He said, "This is a matter far too important to be left solely in the hands of the scientific and medical communities. The belief that it is inevitable, because science always moves forward, represents a form of laissez-faire nonsense, dismally reminiscent of the credo that American business, if left to itself, will solve everybody's problems. Just as the success of a corporate body in making money need not set the human condition ahead, neither does every scientific advance automatically make our lives more meaningful. A blanket declaration of worldwide illegality might be one result of a serious effort to ask the world in which direction it wishes to move. If we do not think about the matter now, the possibility of having a free choice one day will suddenly be gone."

From "The Recombinant DNA Controversy" NEXA, SFSU

## HAL HOLMAN

Department of Medicine, Stanford University

...science and technology no longer exist exclusively as activities that people engage in to get knowledge. Science and technology now assume the characteristics of an ideology. By that I mean that we now think of

# Pointed Personal On Many Aspects of

science and technology as ways of solving social problems. If we have a problem in production, or a problem in environmental contamination, we look to science and technology for the solution. The issue is no longer exclusively one of asking what social or economic relations brought about the problem, and how we might reorder these relations in order to solve the problem. We tend to think that more research and more science will give us a solution. We become dependent upon a small group of people and their activity for technological solutions to social problems.

It seems to me that the ideological features of science and technology are particularly dangerous, because they undermine the participation of citizens in determining social issues. They tend to defer to the greater skills, or knowledge, or wisdom of the scientists. And in that setting, our social capabilities atrophy and we lose the confidence that we can solve our own problems by means that we can understand and apply as citizens. If this argument is correct, the notion that decisions about recombinant DNA research should be left in any way to scientists and technologists would further diminish our understanding, our capacity, and our confidence about citizens' abilities to resolve problems.

From "The Recombinant DNA Controversy," NEXA, SFSU

## LAURA NADER

Professor of Anthropology, University of California, Berkeley

...The question of loyalties is one that has been really interesting to me in talking with a variety of scientists. In a meeting recently, I pointed out to one scientist that anthropologists are not, by our code of ethics, allowed to study people that we do not also carry some responsibility for protecting. That is, "protecting the informant" is a very important part of the anthropological code of ethics. This scientist said that loyalty was irrelevant to science. It is very curious, however, to see that, in fact, there *are* loyalties relevant to science. Some of you may have seen the description in the *Berkeley Daily Gazette* of some mid-western towns—Gary, Indiana, for example—that suffer from a terrible smell problem. That "problem" is going to be solved some day by an injection that changes genes, so that sensory perception is altered. Rather than clean up the stench, scientists working for a chemical company and a university are actually going to change the sensory perceptions of the people who are smelling the smell! The loyalties of those scientists are clear—they are loyal to the people who are paying their salaries. I think there is a tremendous amount of institutionalized insanity that operates when you get very closed groups that do not have a way to reality test.

To make clearer some of my own comments, I would like to say that we may not have all the biological research data that we would want, but social science and history have certainly provided us with plenty of data on human frailty. If there is anything that we know from the history of mankind it is that people make mistakes. And people are never perfect. If we think we can create

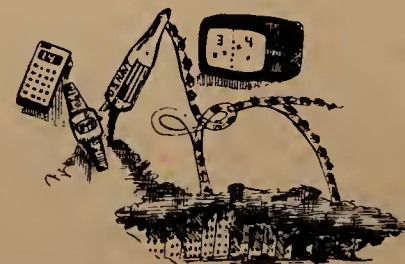
technologies that require the degree of carefulness that this technology requires, we are going against everything we know about human frailty and the mistakes human beings are capable of.

...There is one other comment I would like to make with regard to priorities. We have sold and oversold science on the basis of all the good things it is going to do for society. We now have research being considered that some people rationalize on the basis of finding a cure for cancer. Is our priority going to be to look down still another avenue for a cure for cancer, or to apply what we already know about cancer? There is a general agreement that something like 80%—some people say more than that—of cancer in the United States is caused by environmental degradation. We know what to do about the degradation of the environment. We have the knowledge to begin to clean up the environment and to prevent further degradation. So, if we're setting priorities, why not apply some of the knowledge we already have?

...Government regulation, however it may develop and change its direction in this area, is only one part of the picture. If the public is going to rely solely on government regulation we are going to be, I think, in as much trouble as we are now. Self-regulation, we have to realize, has rarely worked. We do not have a list of professions that have successfully been able to regulate themselves. Do not believe just anything anybody says about self-regulation. It's not possible. The only group I know of that has successfully self-regulated itself is the parachute makers, because everybody who builds a parachute has to try it out; they have to jump out in the parachute that they build. That's the only example that I know of.

...We need to realize one very important thing about the world we live in today: that is that our technological development has outstripped our biological capacity to detect danger. In paleolithic times, or neolithic times, and even today, if somebody jumps at you with a knife you know enough to get out of the way if you can possibly move. You do not have that same biological response when somebody is talking about DNA research, or about hair dyes whose effects are going to hit you 15 years from now, or TRIS that is going to hit your kids 15 years from now. This means that the only way to respond to dangers that are not immediate is through the thinking process and through development of cultural and social institutions that will protect us from these phenomena that we've never had to face before in the history of humanity.

From "The Recombinant DNA Controversy," NEXA, SFSU



From "SILICON VALLEY: Paradise or Paradox?" Sponsored by the Pacific Studies Center



# Perspectives Science, Technology and Values

## RICHARD WASSERSTROM

Professor of Philosophy, University  
of California, Santa Cruz

...It does seem to me to be important to distinguish between two different questions. One is the question of what the various possible risks are, as best we can tell, in conducting research in a certain way. As things are set up now, scientists are in an especially good position to give us that information.

The second question regarding what constitutes an acceptable risk is one that scientists are in absolutely no better position to answer than anybody else, because we are talking about risks that affect people other than the scientists. The fact that people doing research on hazardous germs do it very safely does not get to the issue of whether or not some risk is involved to the rest of us in having that research done.

Let me put it another way — I think it is odd that we feel we should commend the people who are doing DNA research for having brought to the attention of all of us that there were risks attached to it. That would be the minimally obligatory thing for anybody who's doing something risky. I don't think they deserve praise as much as they deserve to be reminded that that is surely anybody's responsibility in society. The fact that we think we should praise them shows something about how our thinking is askew on the topic.

From "The Recombinant DNA Controversy,"  
NEXA, SFSU

## JACOB NEEDLEMAN

Professor of Philosophy, San Francisco  
State University

The title of this series of lectures, "The Art of Living in the Cultural Revolution," points in two directions: first, to the fact that we are living in a time of unprecedented change in patterns of living brought about by the intensive application of scientific technology. In every detail of life — how we work, how we eat, how we move around, how we raise children, how we learn, how we die — there is bewildering proliferation of change, extremely rapid external change. So much so that all the patterns of life to which human beings have been accustomed over the centuries are now being turned upside down.

Second, "The Art of Living in the Cultural Revolution" brings the question of how to be human. How to grow, how to be what we are meant to be inwardly, how to live according to conscience in a world where all the external cues and all the external forms are changing? This question, how to live, is certainly an ancient question, but it hasn't always been the main concern in people's lives. Other questions have taken precedence: how to serve God, how to study nature, how to be safe, how to be happy.

But *how to live* points us to the fact that now we have to start from zero; that there's nothing by itself we can turn to out of pre-supposed trust. It was a question that Plato asked almost two and a half thousand years ago. Socrates asked it in a time when the gods were dying and the physical sciences were no longer in repute. People were torn between the inner world and the outer world. And there was no way of giving oneself completely to either.

Coming to the end of the twentieth century, we're in a similar position...The question of how to live faces us as the question of how to be, how to be toward the ways we have adopted for dealing with nature — the new technologies. What becomes of standards, moral values, not only when they are put against the weaknesses inherent in human nature, but against the world of microelectronics, Xerox machines, sophisticated neurochemicals, all the millions of new developments that have already arrived here in our world? Where do we get our values? How to live them? How to incarnate them? — the values to which we are attracted in this world where all the cues, all the names are changing.

From "Speaking of My Life: The Art of Living  
in the Cultural Revolution," Harper & Row,  
San Francisco

## HASSAN FATHY

Cairo Architect and Author

...The development of the physical and mechanical sciences without equivalent discoveries in the human sciences has produced a technology that allows buildings without any human reference whatsoever. From this anonymity there is a fear of change that is taking place in America. In the very beginning when they first started this highrise, the freedom was exciting, and superimposed on the structures were reminiscences of the renaissance that could be related to. But technology progressed, and it was found that light-weight glass could be used for whole exteriors, which increased the freedom to build even bigger buildings. We have been freed of imitation and associations with past cultures, but I think that, with the glass building, we lost all connection with nature; we eliminated man — and, maybe, architecture itself, if we consider architecture as space enclosed within walls for man's physical and spiritual needs. With glass walls architecture will seep out; it will not be enclosed. And compare the reflection of glass with the Indian temple where every millimeter is carved with qualities of man. You know the story of the man passing by three people dressing stone. And he asks the first one, "What are you doing?" He said, "I am earning my living." He asked the second, "And you?" And he said, "I am dressing a stone." When he asked the third, "And you, what are you doing?" he said, "I am building a cathedral." There is a great difference among the three. To my mind, we are not even dressing stone because we have no stone to dress now. We have fabricated glass; we have a whole wall hanging like a miniskirt. That is our reference to man.

From "Speaking of My Life: The Art of Living  
in the Cultural Revolution," Harper and Row,  
San Francisco

## STEWART BRAND

Editor, The CoEvolution Quarterly,  
Sausalito

Whatever Happened to "Small is Beautiful?"

We did a space-colonies book and several issues on the illusion that either small is beautiful or big is beautiful, and either you're low-tech or you're high-tech, and that's it. I've come to think those distinctions are so stupid and illusory as to be negligible.

It may be because at an early point I promoted the idea of getting a picture of the

whole Earth, which is a high-tech project. Lots of Indians, hippies, musicians, and so on, have claimed to have traveled out and seen the empyrean realms and seen the whole Earth before their eyes — but they didn't bring back photographs. The crewcut Bible-thumpers of Dallas did. It changed ecology; it changed Indians; it changed all the good things that we love. I say if an advance here helps an advance there, how can you have either/or proposition? They are somehow the same proposition, and "small is beautiful" is a luxury that you can afford when you have some other way to grow that doesn't threaten the wild places. I think Governor Brown feels there is a synthesis there which is not contradictory. "Small is beautiful" on Earth; big may be beautiful in space; we don't know yet.

Ivan Illich talks about convivial tools like the bicycle. And in the same breath he says the telephone is a very convivial tool. Pocket calculators in most of their uses seem convivial tools. The making of pocket calculators is not a cottage industry. It makes possible a lot of cottage industry. You've got wonderful symbiosis, so far anyway, between large and complex enterprises and quite small and complex enterprises. Centralization/decentralization — it's like the economy; we aren't socialist or capitalist; we're a mongrel. But mongrels are the smartest dogs.

From "Worlds Beyond," Edited by the New  
Dimensions Foundation; And/Or Press, 1978

## ANONYMOUS

...A fundamental obstacle to the control of technology is that the overall impact of technological change is so hard to predict. Most new technologies have more than one effect. The most important effects are often indirect, and may not even emerge until further technology is developed.

For example, the impact of ballistic missiles is difficult to assess even now. They have greatly reduced the potential warning time available to respond to a strategic attack, but they have also made it possible to build strategic forces which can be based in less vulnerable facilities much farther away from possible sources of attack. Ballistic missiles have been instrumental in the development of the submarine-based nuclear deterrent. Any early attempt to assess the overall impact of the introduction of ballistic missiles would have underestimated or missed entirely the future significance of strategic missiles carried aboard nuclear submarines. The history of technology includes many similar examples of the indirect and interactive effects of technological change...

From Arms Control Report, U.S. Arms  
Control and Disarmament Agency, 1976



The Oakland Study Center

## BUCKMINSTER FULLER

Inventor, Author

The universe is technology; all biology is technology. Anything that operates under cosmic laws — reciprocity, interconvolutarity — is technology. The universe is *nothing but* technology. We, as individuals, represent a most complex technology: the total ecology of the interplay of all the biological elements, the Sun's radiation, the cross-pollination and so forth, the chemistries we develop on this planet are all part of an incredible preexisting technology.

If we want to examine space-age technology, we should keep in mind that we are in space and have never been anywhere else. The space-age technology of getting this planet populated is the most extraordinary space-age technology that has ever occurred. What we've been doing is absolutely childish compared with what nature's already done. Space-age technology is something that's always been going on; it's a mark of great ignorance to speak of it as though it weren't.

Such attitudes are similar to the geocentric idea, which is still around. There are cultures that still think the universe is going around us; there are *scientists* who are still seeing the *sun set*. The level of self-misinformation is very high.

We are already a space colony. If we can't make it in this beautifully equipped colony, we're not going to make it anywhere else, either. And we're not going to carry on any of our space colonies, except by virtue of being colonies from the mother ship. If the mother ship can't be made to work the colonies aren't going to work.

There is no independence in the universe. Everything in the universe is interdependent. The kind of phenomenon we represent — 60 percent water, to give us hydraulic compression, distribution of loads, noncompressibility, the whole shape — this is an extraordinary piece of structuring. We don't know any other planet with water, just this tiny bit of water on the surface of our globe, which looks deep to you and me, but is almost negligible on a planetary scale. If I take a six-foot steel ball, polished, and breathe on it, the condensation of my breath will be deeper on it than the oceans are on Earth. So that water could be vaporized and lost very rapidly, if it weren't for the beautiful set of spheres around it: the Van Allen Belt, the troposphere, all beautifully interacting to hold what we have down here, while we continually take on energy and give off energy. So that surface has to be kept in balance.

It's important, then, to keep in mind that the Earth is already in space, rather than to think of us as going out into space from it. All the things that are going on are simply a discovery by humanity of how the universe operates. We're gradually getting in, a little bit, on our own control system. We're not introducing new technology; we can't invent anything. All we can do is discover what is, and employ it.

Many new tools are evolving with us, as independent entities. However, in the world of the machine, I don't talk about "cybernetic intelligence" (as some do.) I talk about the technology of cybernetics, of steering-system *feedback*, for example, but I don't refer to feedback as intelligence. To discover an error in an angular course and correct it is not intelligence. We have a cultural propensity for talking about things in a way that's really stupid. Newspapers, magazines, need headlines that will sell; so they apply the word "intelligence" to a machine. No machines will ever be intelligent. They never have been and never will be.

There is a physical universe, and a metaphysical universe. The universe, as we began

Continued on Page 9



# Public Policy Grants Awarded

## HIGHER EDUCATION: WHO NEEDS IT?

### Public Affairs Documentary for Television

Sponsor: School of Journalism, University of California, Berkeley

The documentary will be produced in 30-minute and 60-minute versions, as well as single, in-depth discussions of issues concerning public higher education in California. The program will explore the current state of funding for higher education, who goes to college and why, and the relevance of today's education, along with the role of the state bureaucracy in setting goals for the colleges and university. Academic and administrative representatives of all three tiers of California's public higher education, as well as private educators, will meet with businessmen and public officials to exchange information and viewpoints as to how post-secondary education should be conducted.

## THE PUBLIC POLICY PROCESS AND THE DEVELOPMENT OF ETHNIC IDENTITY: THE EAST INDIAN COMMUNITY IN CALIFORNIA

Symposium, oral history collection, resource handbook and exhibit

Sponsor: Center for South & Southeast Asian Studies, University of California, Berkeley

Information about the East Indian immigrant experience in California will be presented to educators, policy makers, the East Indian Community and the general public. Plans include a symposium for community leaders, humanists and policy makers, and several follow-up activities all dealing with the role of past policy decisions, including immigration laws, in the development of the community's ethnic consciousness, and the implications of the recent administrative decision designating East Indians as an ethnic group for purposes of bilingual education and affirmative action.

## MEXICAN IMMIGRATION INTO CALIFORNIA: HUMAN VALUES AND POLICY

Three one-day workshops followed by two-day symposium

Sponsor: Center for Ethnic and Social Policy, Graduate Theological Union, Berkeley

The project will examine critically the complex interrelated factors involved in migration from Mexico, with emphasis on human values, from three perspectives: (1) Rural poverty in Mexico as the source of emigration pressures, (2) the impact of Mexican immigration on California; and (3) immigration policy and Californian-Mexican relationships. A one-day workshop will be held on each topic, in Berkeley, Los Angeles and Sacramento, respectively, involving scholars in the humanities, community and public officials, business, labor and agricultural leaders, persons seeking ways to alleviate rural poverty in Mexico, and persons representing Mexican immigration into California. A two-day symposium will then focus on public policy issues raised by migration and their impact both north and south of the border.

## GUIDELINES FOR BUSINESS WHEN SOCIETAL DEMANDS CONFLICT

Four half-day seminars

Sponsors: Better Business Bureau of Santa Clara Valley, Ltd., San Jose State University, University of Santa Clara

The seminars will each feature business representatives, consumer advocates and scholars in the humanities to discuss the responsibility of business to the public in the following areas: (1) Advertising, Ethics and the Consumer; (2) Employment, Training, Upward Mobility; (3) Education, Career Goals and Life; (4) Retirement, Responsibility, and Preparation. Presentations by speakers from each of the three points of view will be followed by interchange among panelists and participation by the audience. A program kit will contain an overview essay on each topic.

## THE EDUCATION SYSTEM AND THE MEXICAN AMERICAN STUDENT

Conference, public forum

Sponsors: Los Angeles County Schools, Los Angeles City Schools, Mexican American Education Commission, The Lau Center, Parents Involved in Community Action

A conference will convene researchers, educators and humanists to address the issue of relevant education for Mexican American students and whether new alternative education programs need to be developed to meet the needs of minority low-achieving Mexican American dropouts. Parents, school administrators and members of the general community will take part in an open forum discussing parent procedures in alternate education and counseling for dropouts, the strengths and weaknesses of current programs and the possibilities for improved or new programs. Position papers by researchers in the area of low achievement minority students will be developed and used as the basis for pre-conference workshops and participant responses.

## ETHNIC AND ECONOMIC DIVERSITY IN NEIGHBORHOODS — THE NEW INTEGRATION

Five all-day conferences

Sponsor: Los Angeles County Commission on Human Relations

Five conferences between October and April will explore prospects for ethnic and economic integration in neighborhoods as a means of enhancing human community in Los Angeles County. A common format of keynote speech, panel, roundtable and workshops in each conference, with emphasis on audience participation and dialogue, will address these topics: (1) Where We Are and Where We Say We Are Going; (2) Unfinished Agenda: Nondiscriminatory Housing; (3) Interracial Neighborhoods of the Future; (4) How to Achieve an Open Society; (5) Policy and Practice for the Future. Scholars from many disciplines of the humanities will share their perspectives with officials and developers who plan and build neighborhoods and citizens who live in them.

## EDUCATION IN THE HUMANITIES VERSUS THE REVOLT OF THE TAXPAYERS

Five town hall meetings

Sponsor: Faculty Association of California Community Colleges, Inc., Sacramento

The town hall meetings in separate community colleges around the state will seek to clarify the relationship of humanities to society as a whole and the extent to which public revenues should be used to support public education in the humanities. Scholars in literature, philosophy, and history will engage in discussion, analysis and debate with public officials, private entrepreneurs, tax reformers and the general public. Proceedings will be edited, published and distributed to participants.

## THE FUTURE OF IMMORTALITY

Hour-long color videotape documentary for public television

Sponsor: Cerberus, Inc., San Francisco

This program will examine the pro-longevity or life extension movement and the questions and controversies implicit in it. Scholars in bioethics, philosophy, cultural anthropology, American studies and literature, will consider whether the primary objective of the science of biogerontology should be to improve the quality of life for older people or to extend the lifespan of the human species. They will address the impacts of prolonging the duration of life on such areas as housing, income distribution, employment, political activity, family structure. They will also interpret the social context which generates the life extension movement's rapid development and discuss the role of government in guiding or controlling the research and procedures.

# Humanities Projects in Public TV and Radio

## TRINITY

One-hour film for television

Sponsor: KTEH-TV, San Jose

This film will depict the life of J. Robert Oppenheimer, a student of poetry, linguist, and eloquent humanist who became the father of the atomic bomb, in terms of the "relationship between personal morality and great historic processes." Oppenheimer's life story poses the questions of a scientist's responsibility for his work and a nation's responsibility to its scientists, questions which generalize to encompass the dilemmas of responsibility faced by any citizen of the world, whatever his occupation.

## JAPANESE-AMERICANS — FOUR GENERATIONS OF ASSIMILATION

One-hour radio documentary

Sponsor: Western Public Radio, Inc., San Francisco

The documentary, produced for airing on National Public Radio, will examine various viewpoints on two questions: (1) that Japanese-Americans, despite discrimination and the historic attitude that Japanese could never be assimilated, have become what sociologists call America's "model minority;" and (2) that Japanese-Americans, by fulfilling the American "Melting Pot" stereotype, are headed toward what some see as "ethnic suicide." The program will trace changes beginning with the Issei, first generation Japanese-Americans, and continuing through three generations of their descendants.

# Local and Cultural

## Planning Grants

### GOLD RUSH WOMEN

Half-hour color film

Sponsor: Center for the Visual Arts, Oakland

The film is planned to illustrate the community of women in a California mining town in 1860, using the historically preserved town of Murphys in Calaveras County as a set, and recreating episodes described in women's letters and diaries. It will focus on the physical and environmental hardships which forced women to change their lifestyles and see their feminine role in a different light, and the necessity of community action to solve many problems associated with the rugged and isolated setting. A second theme will deal with the problems of Indian-White relations in the Gold Rush community, as seen through the eyes of a California Indian woman.

## THE SIGNIFICANCE OF THE OVERLAND IMMIGRANT MIGRATION ON GROWTH AND DEVELOPMENT OF THE DONNER SUMMIT

Public Forums, newsletter and related activities

Sponsor: Donner Summit Area Assoc., Soda Springs

Six public forums will examine the historic land use patterns in the Donner Summit Area, from the prehistoric period through the present, taking up the first use by native Indian tribes, the importance of the area as a transportation route for emigrants and later the transcontinental railroad, and the currently increasing development for recreation. A bi-monthly newsletter will follow the progress of the project and will include photographs, maps and documents of historical significance. Also planned for publication are three histories written by early settlers, and a popular history. A fourth component will be field trips for local school students to Indian sites and Basque trails on the summit.

## HISTORY OF SAN FRANCISCO'S NEIGHBORHOODS

Exhibit of photographs, brochure, slide show, more —

Sponsor: San Francisco Study Center

A many-faceted project will document and interpret the history of San Francisco's more than 60 neighborhoods, from the Presidio, the oldest, to the newest in Diamond Heights. It will include a mobile exhibit of photographs, an explanatory brochure to accompany the exhibit, and a slide show with an audio component. Taped interviews with 160 San Franciscans and their families will provide captions for the photographs, text for the brochure and an audio track for the slide show. Major topics developed from a study of city agencies cover, in addition to the changing demographics of the city, the rise of public institutions, the use of land, the importance of artists, and the evolution of neighborhood organizations.

## SANTA BARBARA COUNTY HISTORY FAIR

Student community history projects culminating in a Fair

Sponsor: Graduate Program in Public Historical Studies, Department of History, University of California, Santa Barbara

A History Fair, modeled in part on the popular concept of the high school Science Fair, will be planned for Santa Barbara County. Sponsors will develop information resources on cultural and historical themes relating to county community history, and through workshops and guidelines, present these to educators to encourage students' Community History projects to be exhibited and judged at the Fair. The Fair seeks to create a greater awareness, appreciation and understanding of the cultural and multi-ethnic historical heritage of the county. Post-Fair activities will include mobile exhibits at central locations, media coverage, and production of an informational pamphlet.

## THE OAKLAND NEIGHBORHOODS PROJECT

Exhibits and related programs

Sponsor: Camron-Stanford House Preservation Association, Oakland

The project will look at four original neighborhoods in Oakland; West Oakland, Temescal, Fruitvale and Chinatown, in terms of their histories, their physical components of streets, stores and houses, and their past and current residents. By documenting the evolution of immigrant colonies and their impact on various geographical areas, a better understanding and appreciation of Oakland's cultural heritage will be created. Activities will include exhibits of photographs and artifacts for libraries in the neighborhoods; slide-tape programs on each of the neighborhoods; a weekend seminar, open to the public, for research papers devoted to the topic; and a one-unit college course on the four neighborhoods that includes walking tours.



# ltural History

## HISTORY OF CHINESE AMERICANS OF NORTHERN CALIFORNIA

Exhibit and related activities

Sponsor: Chinese Historical Society of America

The project will plan to conduct oral interviews with Chinese Americans in the San Francisco, Sacramento, and Marysville areas to document their experiences from the turn of the century onward and provide a "living cultural heritage" both for the ethnic community and the community at large. It will also produce an exhibit of photographs and interpretive narrative for libraries, museums and schools, organize and catalog existing tapes and edit and compile the collected tapes for radio presentation.

## ALCATRAZ FILM PROJECT

16 mm Color, Sound, Documentary Film

Sponsor: The Cinema Workshop, San Francisco

This film, planned for television and educational use, will cover the history of Alcatraz Island from the first Native inhabitants, and show how the life-styles and cultures of these peoples were affected by the early explorers, the Russian traders, the Spanish Missions, the Mexican influence, the Gold Rush, and the American period from 1850 to the present. It will discuss the causes and goals of the Indians of All Tribes who held the island from November, 1969, to June, 1971, and the later effects of this time on the Bay Area Native American Community, using films and oral histories from the months of occupation.

## PROSPECTS

30-min. Color Film/Videotape Documentary

Sponsor: Siskiyou Performing Arts Center, Yreka

Producers will explore the goldmining history of the Salmon River area in Siskiyou County through the story of two mines and the families that worked them from the 1850's until their shutting down. Events in the area will be linked to activities in the larger California gold rush scene. The history of these mines will be brought up to date and the problems of the contemporary small mine operator will be depicted. The "Prospects" of the title refer to the projected interests of individuals and government agencies in the area for the future.

## GO WEST, YOUNG MAN, THEN TURN LEFT...

16 mm. Color Film

Sponsor: Fort Mason Foundation, San Francisco

Production will be scripted to follow the development of the Bay Area community from 1846 to the present through the metaphor of transportation. Historical photographs of ships, ferries, planes, trains, cable cars, trolleys, buses, etc. will be animated, and historical film footage incorporated, to create a perceptual montage of past and present urban activity. The camera will attempt to convey the psychological sensation of experiences by assuming the subjective attitude of the participant, to recreate and contrast varied visual and psychological experiences of moving to, through and from an urban center.

## Operational Grants

### LIBERTY SHIPS...FLEET WITHOUT FANFARE

30 min. 16 mm. film

Sponsor: Film Arts Foundation, San Francisco

This film will tell the story of Liberty shipbuilding in Richmond, California and elsewhere. It will explore the wartime antecedents of many current social issues, including women's changing role in industry, minority employment and equal pay, the development of labor unions, and the collective pride and cooperation of a labor force. It will also cover the effect upon Richmond and similar communities: the migration from the South to its rapidly expanding shipyards, the population increases, building booms, housing shortages, economic changes, ethnic distribution, life styles. Post-war developments addressed will be the closing of the yards, the widespread unemployment and the subsequent adjustments of both workers and community.

### LA CELEBRACION

Many-faceted bicentennial celebration

Sponsors: National Repertory Theatre Foundation, Los Angeles

This grant will support the participation of humanists in a multimedia sound and light presentation at the site of the founding of Los Angeles. Opening for the city's bicentennial, the show will present Los Angeles' origin, growth and cultural contributions as an on-going educational, multi-lingual (11 languages) sound track available to local residents and to the city's visitors, estimated at 9,000,000 annually.

# Multidisciplinary Seminars

## ISSUES IN WORK

Sponsor: Immaculate Heart College, Los Angeles

Eight seminars on the subject of work will include: (1) a two-faculty presentation on Women and Work, including autobiography; (2) Lincoln's attitudes toward work; (3) Labor history in Los Angeles; (4) Dickens' descriptions of problems related to work; (5) Melville and work; (6) The relationship of work to personal identity in films. Off-campus guests: workers, women, lecturers, professors, artists, union organizers, will share with faculty members from the humanities and other disciplines their perspectives on topics such as work and its meaning in earlier times, alienation in classic Marxist terms, flexibility and rigidity in the job, failure of the one-career imperative, and the necessity of changing careers several times in one's lifetime.

## THE AGE OF WISDOM (OLD AGE, RETIREMENT, AND PUBLIC POLICY)

Sponsor: The Wright Institute, Berkeley

Seminar meeting will demonstrate that public policy on retirement and aging involves serious philosophical, ethical and esthetic dimensions which the humanities can illuminate. Plans for decision-making and action on the part of business, government, industry, education and public interest groups will emerge from the discussions of values, as well as strategies for incorporating values and humanistic insight into the practical activities of daily life and planning for the future. Seminar papers will result in a series of published essays on the general topic of "Significant Roles for Retired Persons in American Society."

## IMAGES OF CALIFORNIA CULTURE

Sponsor: Institute for Governmental Studies, University of California, Berkeley

A series of ten seminars is centered around the following goals: 1) to heighten awareness of the multiple complexion of California culture; 2) to stimulate thought about the contributions of an interdisciplinary approach to understanding culture; and 3) to encourage public policy considerations of the significance and complexity of California culture. To explore the many and various aspects of culture in the state, participants will examine 1) historical and artistic interpretations of culture; 2) life-styles, including political, ethical, religious, and personal identifications; and 3) dynamics of culture and public policy. Three seminars will be nominated for university-wide participation through the California Research Colloquium, and three major addresses will be open to the public.

## SEARCHING FOR CIVILIZATION: THE HUMANITIES AND TECHNOLOGY IN THE FORMATION OF PUBLIC POLICY

Sponsor: California State Polytechnic University, Pomona

Three themes will be explored in nine weekly meetings each, in three successive quarters: (1) Public policy in a time of scarce resources: can altruism survive? (2) Public policy and the dilemma of citizenship: the conflict between collective good and private need; (3) The greening of the earth: the collaboration of technology and the humanities in the development of a planetary ecology. Appropriate experts from on and off campus will make formal presentations at each meeting to which two scholars from the humanities and one from the technical disciplines will respond, followed by questions and comments from the audience of about 50 faculty, staff and students. The three scholars will each write a summary paper at the end of their quarter's participation, and the nine papers will be printed for distribution on the campus and among the public.

The following Local & Cultural History projects, reported earlier as planning grants, were approved for the operational phase: TRI-COUNTY ORAL HISTORY RADIO PROJECT

Sponsor: KUSP-FM Radio, Santa Cruz

### TERMINAL ISLAND

Sponsor: Japanese American Citizens League, Los Angeles  
SAN FRANCISCO SUNDAYS

Sponsor: Stern Grove Festival Association, San Francisco  
THE IMPACT OF THE DISCOVERY OF OIL ON THE HISTORY OF LONG BEACH

Sponsor: Long Beach Consortium for Local & Community History

From "Science and Public: Recombinant DNA," sponsored by the Health Services Research Division Stanford University School of Medicine



# Innovative Projects In the Humanities

## WORK, PLAY AND WORSHIP

Sponsor: Schools of Communicative Arts and Humanities, California Polytechnic State University, San Luis Obispo

A series of public forums for faculty, students and townspeople will take place approximately every other week during the fall, spring and winter quarters, to explore the nature of the human activities, work, play, and worship, through lectures, presentations and free discussion sessions. Art displays, workshops, luncheons and class presentations will enhance and follow up the activities of the forums. The project is designed to provide dialogue between scholars in the humanities and students and faculty in the social sciences, natural sciences, and technology, with the goal of enriching the quality of life in the university and in the community.

## THE GRAND JURY: AN INSTITUTION IN TRANSITION

Sponsor: The Grand Jurors Association of Los Angeles

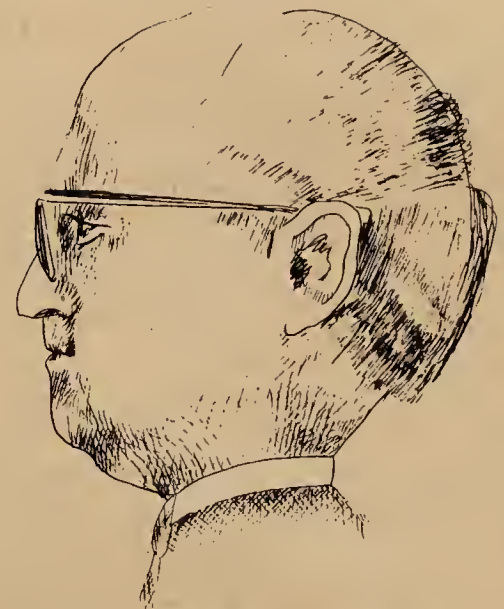
A two and a half day seminar for new grand jurors will help to broaden their perspectives by interacting with and hearing formal presentations by scholars from the humanities. Topics to be addressed include the historical dimension, ethical conflicts, future alternative directions, and procedural workings of the grand jury system and its impact on society in general. The format will include panels, workshops, lectures and films on subjects pertinent to the grand jury's investigative function into education, health services, juvenile justice, environmental protection and county government. The retreat will be for new grand jurors and invited resource people only.

# Five Council



**JEAN R. WENTE**

Board Member,  
Oakland Museum Association



**CLIFFORD L. DOCHTERMAN**

Vice-President,  
University of the Pacific

*In thanking retiring Council members for their years of dedicated service, Executive Director Bruce Sievers presented each one with a framed caricature drawn by cartoonist Debbi Pughe.*

Announcing  
a Course by Newspaper - Fall 1979

# Connections Technology & Change



**CbN**  
Courses by Newspaper

Courses by Newspaper is a project of University Extension, University of California, San Diego, and is funded by the National Endowment for the Humanities.

# Four Join Council

Four new members have recently been elected to the Humanities Council, replacing those whose terms have been completed and bringing the membership number up to 20.

## CARL N. DEGLER

Carl N. Degler is Professor of History and Margaret Byrne Professor of American History at Stanford University. He holds a Ph.D from Columbia University and has taught at several eastern universities. He has been a visiting professor at Columbia University Graduate School and at Oxford University.

Degler is the author of several books, one of which *Neither Black Nor White*, won a Pulitzer Prize in History, a Bancroft Prize from Columbia University, and was co-winner of the Beveridge Prize of the American Historical Association. He has been President of the Pacific Coast Branch of the American Historical Association, has served on the Editorial Board of several journals in the field of history, and is an elected member of the American Academy of Arts and Sciences and the American Antiquarian Society.

## JEAN FRANCO

Jean Franco holds the Olive H. Palmer Professorship in the Humanities at Stanford University where she is Chair of the Department of Spanish and Portuguese. Her Ph.D is from the University of London; she also holds a degree in history and a diploma in education. Her former teaching positions were at London University and Essex University.

Franco has written several books on Spanish American Literature, Society, and Literary History, editions and anthologies in English and Spanish, and numerous

professional articles. She has edited the Bulletin of Latin American Studies, served on the Editorial Board of the Latin American Research Review, and was awarded a Guggenheim Fellowship in 1976-77.

## WALTER W. MINGER

Walter W. Minger is a senior vice president for Bank of America, with responsibility at the policy level for the bank's worldwide agricultural lending activities and agribusiness relationships. He has been with the Bank of America for 32 years.

Minger served as the 1978 chairman of the Executive Committee, Agricultural Bankers Division of the American Bankers Association, and was appointed a member for the 1978-79 term of the U.S. Chamber of Commerce, Food & Agriculture Committee, and the International Investment Subcommittee.

## THOMAS SANCHEZ

Thomas Sanchez is the author of many critical writings and essays that have been widely published in local and national media. He received a Master's Degree in Literature from San Francisco State University and has been an instructor there.

His 1973 novel, *RABBIT BOSS*, a four generations historical novel of a California Indian tribe, has received international acclaim. A second novel, *ZOOT-SUIT MURDERS*, published in 1978, also drew enthusiastic critical praise.

Sanchez has been awarded a Fellowship from the Literature Program of the National Endowment for the Arts. He was also commissioned to write and host ABC television's five part news documentary concerning economic, educational and political issues of California's emerging Hispanic majority.

# Public Invited

The Humanities Council's forthcoming meeting on Saturday, September 22, will include in its agenda time for hearing from the public. Anyone wishing to present a

statement to Council members should write to the San Francisco office for details and an appointment on the schedule.



# Members Complete Terms



**LAURA NADER**

Professor of Anthropology  
University of California, Berkeley



**W. TURRENTINE JACKSON**

Professor of History,  
University of California, Davis



**A. R. LOUCH**

Chairman, Department of Philosophy  
Claremont Graduate School

## Technology and Human Values: Policy Questions

Continued from Page 1

control of technology; nuclear power, recombinant DNA research, application of medical technology, computer information networks and privacy, alternative energy systems, food production and processing, behavior control, and on through the endless list of policy problems associated with unprecedented technological advances.

What emerges from an overview of such issues is an awareness that the very means used to solve many problems in society—applications of new technologies or methodologies—form in these cases part of the problem. The dilemmas operate on deeper levels—those exemplified by the Promethean myth and the Luddite movement—how to control seemingly uncontrollable forces and how to ameliorate the application of inhumane processes to human beings.

There is yet a more subtle aspect of the impact of technology upon society currently under discussion by contemporary humanists: the shaping of entire world-views by the norms of technological rationality. The frame of mind in which "cost-benefit analyses," "economic bottom lines," and "social indicies" become the final and only defensible grounds for decisions on social policy, is the frame of mind of the technological society. It is a meaning scheme which, as Jurgen Habermas succinctly points out, embodies "the repression of ethics as such as a category of life."

The articles by humanists contained in this edition illustrate the attempt to raise the more fundamental questions in the process of examining public policy decisions on the use and control of technology. The essays suggest the depth and pervasiveness of the issues and of technology itself. Whether technology is in fact on the verge of becoming

## BUCKMINSTER FULLER

Continued from Page 5

to find out at the beginning of this century, in Einsteinian terms, is all energy. Energy can neither be created nor be destroyed. The physical universe is all energy; radiation is energy. A needle on an instrument will be moved either gravitationally or electromagnetically. Anything that is metaphysical will not move needles. The sound I make when I talk to you is physical, but the meaning within the sounds is completely metaphysical. Your whole intellect is utterly metaphysical, whereas the cybernetic deals very much with the physical—like the arrow, or the needle, which shows that your course is wrong. That's why "cybernetic intelligence" is a contradiction in terms.

It's similar with the so-called world of the machine. I've said that the universe is nothing but technology. People have been so careless as to think of us as some kind of china doll with nothing underneath the surface. Now we're beginning to learn about what's in the brain; and it's incredible.

What is really going on is that *mind is discovering the principles of brain to be only a special case*, coordinating the input of all the senses—olfactory, auditory, optical, tactile—and, to some extent, the esthetics and the intuitions. All that's happening is that we're discovering the principles that have always been there, and learning to employ some of those principles, and discovering more about how they operate.

The ocean's been working the same way all the time, the waves have moved that way all the time, those bubbles in the surf have been the same all the time. It's just that we know a little more about them. We have been able to participate a little bit in nature's own carryings-on. We're not introducing anything new in the universe.

"uncontrollable," and whether the public has a right to intervene in the private pursuit of scientific knowledge are open questions. But they are questions in need of thoughtful public debate, and that debate cannot deal with the essence of the problems without the insights of the humanities. \*

Evolution is continually working, continually transforming, intercomplementarily transforming by laws which operate in such a way that we have an eternally regenerative universe. Coevolution is, then, the increase of our knowledge about what's going on, that's all.

Human beings have developed words so that we can communicate our experiences: that's what education is. Although we became able to write, and to compound all the experiences and information of all the people before us, gradually discovering the principles operating in that information, we were misinterpreting the special case of ourselves, and missing completely what its significance was. That makes the present cultural change a fascinating one; each child born, successively, is given less misinformation; the old misinformation becomes simply irrelevant. Moreover, each successive child is being born in the presence of more reliable information. It doesn't make much difference how they use their sense, how they get it.

When I was young, people wanted to get what they considered a desirable job, to look fancy. I learned it didn't make a difference what the job was. If it was just sweeping, I could learn an incredible amount by sweeping. I learned what makes a floor. I learned about microbes. I learned the principles of sweeping! I've never had a job that wasn't just full of the most beautiful information.

This is why I say I'm not worried about the way new information gets to children, whether they're sitting in front of a TV set, looking at the newspapers, or just looking at the cartoons. The kids are going to latch onto whatever it may be.

The fact is that latching onto the TV is really a most wonderful thing. An apparent problem is that we're using it as a means to make money—to sell toothpaste, and so on. The kids, however, aren't really so much interested in that information, but just in the way the thing is working. They love the technique; they're studying the technique all the time. They take in the use of language much

more than they do the message. Parents think their kids go for the story, but a child has stories in which he can play "Shoot Grandma," and it doesn't mean a thing. You can shoot Grandma twenty times, and it doesn't really mean shooting Grandma, but they'll play it over and over. Similarly, as far as they're concerned, what's going on on TV is another game. What really counts is the things that are behind this; that you're really feeling Grandma's love, that she really did get you some cookies. Something else is going on all the time.

My hope would be that we take advantage of the fact that the kids are glued to the set, and give them some of the synergetics, the mathematics, that will really fascinate them.

Then the 99 percent of humanity that doesn't understand that the universe is nothing but technology, who think that technology is something new and undesirable, who can be fooled into using phrases like "cybernetic intelligence," will be able to catch on to nature's way of producing. They can learn about the way things grow, what a structure is, how you employ the principles in the most economical way so you can harness all the wonderful energies that are available in your own little home. All these things can come about if the world will realize that we really have the option to make it.

We must no longer be engaged in "It's you or me—I have to make a living." We're really here to solve local problems in the universe. Each one is to find out what it is he or she has a proclivity for, and begin to solve those problems.

Our young world is in love with truth. You used to be able to say to kids, "I want you to be loyal to our family, loyal to our team, our school...and everyone else is a foreigner, dangerous and obnoxious." Kids won't do that any more. They're beginning to see human beings as human beings. Their values are figured in terms of judging what is true themselves. They just can't stand hypocrisy; they can't stand pretension; they can't stand fake glory. Our values are getting purer, richer, and more reliable. \*



In honor of the 100th anniversary of Albert Einstein's birth, the National Endowment for the Humanities, in cooperation with Princeton's Institute for Advanced Study, is sponsoring a nationwide celebration. In cooperation, the CCHPP is offering a travelling exhibit, a film, a lecture bureau, and possible funding to interested sponsors such as libraries, museums, universities, and other non-profit organizations.

The Einstein Centennial Celebration is an occasion for bringing the humanities, the sciences, education, government, and the public together for the purpose of recognizing the humanistic legacy of the life and work of Albert Einstein. The main premise of the celebration is that the life and work of Einstein deserve public recognition in terms of the sciences and the humanities.

Sponsors may wish to use the exhibit and film as a centerpiece for a program designed around the Einstein Centennial. Topics might include, for example, the impact of Einstein's ideas on traditional and familiar western values, Einstein and the history or philosophy of science, or more generally the social responsibility of scientists. The CCHPP has compiled a list of lecturers who have indicated a willingness to speak once or twice during the coming year on some related topic. Sponsors with specific plans for a program for which there is no available source of funding should inquire about the availability of a mini-grant from the CCHPP for expenses such as honoraria, per diem, and shipping costs.

# Einstein Exhibit Offered

## EXHIBIT

The Einstein Exhibit is a free-standing framework nearly seven feet high holding eighteen panels, each two feet wide by four feet high, describing the life of Albert Einstein. The growth of Einstein's scientific work, presented in layman's terms, is of course a main feature, but the exhibit devotes even more space to explaining his extensive public and political work, his role in world culture, his philosophy, and his quality as a human being. There is an authoritative text prepared in consultation with leading historians; a rich selection of quotes of Einstein's own words, in color overlay; and illustrations including photographs, drawings, and reproductions of manuscripts, drawn from a variety of sources.

The exhibit highlights the effect of Einstein's life and work in a variety of ways. Einstein was instrumental in the development of a new way of thinking and his theory of relativity represents a radical change in the direction of scientific thought, and the exhibit traces the genesis and influence of his ideas. Although Einstein's philosophical and religious convictions were often at odds with conventional beliefs, he was convinced that the harmonious, orderly working of the

universe was the way that God revealed himself, and the exhibit shows how this belief played an important part in his work. Einstein's efforts in the cause of disarmament and world government is amply revealed in the exhibit. He willingly accepted an obligation to speak out, to warn people everywhere of the unparalleled dangers of new weapons technology, and to articulate his vision of a world fit for the natural exercise of human faculties.

## FILM

"Einstein; The Education of a Genius" is a 44 minute long, 15mm color film narrated by Peter Ustinov dealing with Einstein's formative years. For the most part, the film does not present in any great detail Einstein's scientific theories. Rather, it shows the man and the environment out of which those theories grew; it develops the relationship between his non-verbal and imagistic thinking and the experiments which underlie his theories, and shows the very special linkage of science and art. This linkage is a recurrent theme in the life of Einstein; his theories are recognized as works of art as well as science.

The CCHPP is arranging to circulate the exhibit and the film free of charge to sponsors who wish to use them, are willing to pay all associated expenses for shipping and



insuring, and agree to send them to the next exhibitor as scheduled. Shipping costs should not exceed about twenty-five dollars. The exhibit and the film will be loaned to institutions and organizations throughout California for a period of one to two weeks or longer, depending upon demand.

Michael Roemer on the Council staff is overseeing the dissemination of the exhibit and film. Any group interested in the exhibit, film, lecture bureau, or mini-grant should write the CCHPP San Francisco office or telephone (415) 391-1474.

## Autonomous Technology

Continued on Page 1

their firm control,

3. that technology is essentially neutral, a means to an end and that the benefit or harm it brings depends on how we use it.

On one level my discussion simply tries to identify the important ways in which those premises can be questioned and to examine critically a host of specific examples and theories about the conclusion that in some important sense technology has escaped meaningful control. Thus, the book takes up questions of technological change and its "unintended" consequences, drift, technological determinism, technological imperatives, technocracy, instances of reverse adaptation (in which ends and means change places), the problem of the loss of agency in very large systems, and other predicaments of that kind, attempting to clarify and demystify their meaning.

I want to examine briefly some of these themes in the light of recent developments in American society.

### PROGRESS?

Issues under the general rubric of technology-out-of-control best known to the public right now are those that have to do with the "unintended" consequences, the so-called side effects, of technological innovation and application. Most obvious of such cases at present are those that affect our health or the quality of the environment. For example, in August, 1978, at Love Canal near Niagara Falls, New York, hundreds of families in one neighborhood were forced to evacuate their homes because of the poisonous effects of chemicals dumped in a nearby field by an industrial company some twenty years earlier.

Because the industry responsibly for the dumping had long since moved to another location, the multi-million dollar task of compensating the victims of this horror fell into the lap of the Federal Government. President Carter declared the neighborhood a national disaster area, the first time that a

man-made environmental disaster of this sort had ever been placed under that category.

Of course, stories of this kind have become an increasingly familiar part of the daily news. There is a sense in which during the past thirty years or so, we have all become an increasingly familiar part of the biological and social experiments, the results of which we learn about only very slowly. Food additives—preservatives, coloring agents, and the like were added to the food we eat. Atmospheric nuclear bomb testing raised the level of background radiation we encounter in a lifetime. Pesticides, herbicides, chemical fertilizers, and industrial pollutants were spread into the environment with reckless abandon and now exist as parts of our food and water supply.

Noise levels in our towns and cities have risen by leaps and bounds with consequences that we are only now beginning to understand. A study released recently showed an abnormally high rate of birth defects in children born to mothers who live in the flight path of the L.A. International Airport, evidently the result of the mothers' emotional and physiological response to jet noise during pregnancy.

Of course, as the bad news about such things as DDT, DES, PCB, TRIS, and saccharin comes along, people do not like it. A substantial number of the American people are now prepared to say that they do not care what the best scientific studies show about the carcinogenic properties of saccharin, they want to put it in their soda pop and coffee anyway. This backlash against ordinary environmental prudence is also evident in the extraordinary steps that American industry is now prepared to take to avoid even the modest regulations about health, safety and environmental quality prepared by Congress and enforced by OSHA and the EPA. All of it amounts to a declaration that we have gotten used to having benefits of technological conveniences without having to pay the costs.

Autonomous technology, one might say, is simply another name for "progress"—the beneficent stampede of incremental improvements brought to us by the success of modern science and technology. For the past two hundred years or so Western civilization has been deeply committed to the idea of progress in exactly this sense. Part and parcel of this doctrine was the idea that each generation would pass on to the next generation a world appreciably better than the one it had received. Progress in the ability to manipulate nature for human benefit and progress in the ability to resolve vexing social problems through the accumulation of wealth would, it was thought, lead to a gradual, accumulative and more-or-less automatic amelioration of the human condition. Now, however, there are good signs that belief in this notion is fading. Many people are able to acknowledge that our primary legacy to the future may well be a host of social ills and environmental catastrophes created by our own recklessness and irresponsibility. A thoroughly despoiled environment, a cancer epidemic, and a set of social institutions that no longer do what they are supposed to—this may be our bequest to the twenty-first century.

How will we be remembered by generations yet unborn? Do we even care?

### THE TECHNOLOGICAL IMPERATIVE

The technological imperative and reverse adaptation are closely related ideas. The possibility that technological development eventually forces us down certain paths, that it places before us certain turning points that have a force of necessity rather than of free choice, is a hypothesis that many find difficult to accept. People tend to argue in return that in principle we always have the choice to do something or not to do it. And I reply, yes, but it is a "principle" increasingly hollow of substance.

An example will illustrate the point. I remember a day in 1972 when I stepped into a building in Oakland, California, going about my business in a perfectly harmless way, and was suddenly accosted by a tall, burly officer of the law who put me against a wall and frisked me. I was not pleased. A fundamental principle of the American Bill of Rights is that searches and seizures without due cause and a proper search war-

rant is a violation of one's civil liberties.

Since that time I have gotten over my original shock and resistance in much the same way, I suppose, that people in Nazi Germany got used to the Gestapo rummaging through their neighborhoods. Now I routinely subject myself to the search at regular intervals without so much as a peep. Of course, I am talking about security precautions required as one boards a commercial airplane. The history of that particular network of transportation was that it showed itself to be so vulnerable to disruption that searches of all passengers became necessary. After a certain point there was no choice. And as it now stands, any reasonable person must recognize and even applaud the necessity to submit to this process as she or he walks through the gates where humor is forbidden.

Of course, electronic gadgetry now makes it all very comfortable and convenient. Isn't that nice? But the question arises, where else will we find it necessary to countenance or even applaud the erosion of freedom in other areas in which the conditions required to keep technological systems running require the repression of human unpredictability? How many more vast, complex, and surprisingly vulnerable systems are we going to build in our ongoing experiment to find the answer to that question?

In that regard the issues now before our society concerning energy and other crucial resources are particularly interesting to a political philosopher. Nuclear power stands before us as something evidently required by a technological imperative — the next step in a long progression of developments which have produced and sustained modern industrial society. Although we did not realize it at the time, each Gold Medallion, all-electric home built in the 1950s was a vote for nuclear power in the 1980s.

The operation of nuclear plants and the radioactive wastes they generate give rise to a whole host of new security arrangements that themselves seem to be inevitable. Thus, in my conversations with well-informed people who have read *Autonomous Technology* I often hear spirited refutations of my hypotheses about technological imperatives and reverse adaptation, only to find in the end that the same people are eager to proclaim that "We have no choice but to go nuclear."



# Autonomous Technology

You see, in a true sense my book is not about technology at all. Its main concern is the irony of human thought and action.

## LOSS OF MORAL AGENCY

At the heart of all ideas about technology-out-of-control is the gnawing sense that an impersonal agency is at work in the world. Something else, not human individuals or groups, is felt to be the source of what people see happening around them. This, of course, has been a dominant theme in science fiction from Mary Shelly's *Frankenstein* to the present day. In countless novels, stories and films, man-made creations rebel against their makers and wreak havoc across the land.

It is easy enough to show the absurdity of such ideas, to demonstrate that human beings are always the ones who act and not some impersonal, alien force. It is possible to argue, as I often hear, that it is "unfair" to "blame" technology for anything that happens. That argument itself, however, speaks of technology as if it were something personified and could be treated fairly and found blameless in a manner appropriate to persons.

The hypothesis of an impersonal agency in technology arises at a time in which the distinction between what human beings do and what artificial systems do has blurred. This creates not only interesting possibilities for science fiction writers and film makers, but also whole new vistas for human mischief. *Autonomous Technology* calls attention to a number of cases—not the least of which are those of Adolf Eichmann and Lt. William Calley—in which the vast size and complexity of modern socio-technical networks has been employed as a moral excuse. At his trial Calley's defense argued that he could not have been responsible for the killings at My Lai since he was a mere cipher in the U.S. Army's vast mechanism. He was, in effect, too close to the deed to be at fault. Calley, the defense suggested, was being used as a scapegoat for those higher up in authority.

But as one looked upward, one found that the argument was one of diminished responsibility at that level too. Those in positions of near or distant command *did not know* (or said they did not know) what was happening. Since they could not control everything that had occurred out in the field, it followed that they could not reasonably be held to blame for the events that took place.

The kinds of large-scale man/machine networks that we have again and again built in the twentieth century—call them "technologies," call them "organizations," call them "corporations," call them "modern bureaucracies," or whatever you like—now serve as breeding grounds for a kind of moral irresponsibility. It is the kind of irresponsibility (1) in which people simply do not feel responsible for what they do and (2) in which it becomes difficult to *hold them responsible* for events that occur as a result of their doing. Thus, in the recent revelations about widespread corruption in American business, a very common response, was, in effect, "What else is a guy gonna do?"

The fascinating book, *Ethics and Profits* by Leonard Silk and David Vogel, documents the sense of injustice with which business leaders greeted the public outcry about revelations of bribery, profiteering and illegal campaign contributions. Businessmen, according to Silk and Vogel, feel hemmed in by the complex relationships "between business and government in the 'mixed economy.'" The structure of the situation seems to require actions that, while they may be effective in a business sense, are also unethical. The lament of one business leader expresses the problem: (p.220):

"Can free enterprise survive inaccurate, misleading, or 'unexplained' financial reporting? Or auditors who violate their code of ethics to help companies falsify financial statements and perpetrate massive swindles, running into the hundreds of millions of dollars, that involve inflated assets, sales and earnings, fraudulent insurance

also have recourse to a new excuse: "Look, I just work here."

## THE TECHNOCRATIC DISPOSITION

Writing is a peculiar business, not unlike putting notes in bottles and casting them into the sea. In the year and a half since *Autonomous Technology* was published, a number of reports have come back to me as my letter to the people washed up on near



The National Conference of Christians and Jews  
Southern California Region

policies, nonexistent securities, and the collection of death benefits on coverage that never existed?

What are we to think—not just of the executives behind the fraud and the auditors who helped them—but of the dozens of employees who knew about the fraud but did nothing, and the powerful investors who benefitted from the inside information?"

An awareness of situations like these is often the occasion for calls for a moral or religious awakening or the institution of a code of ethics. But the specter of technics-out-of-control—an impersonal agency that acts while we stand back and watch in amazement—is a symptom that deserves to be taken seriously. In this regard one of the most difficult passages in *Autonomous Technology* for my students to deal with is one that comes at the end of my chapter on *Complexity and the Loss of Agency*.

"The problems for moral agency created by the complexity of technical systems cast new light on contemporary calls for more ethically aware scientists and engineers. According to a very common and laudable view, part of the education of persons learning advanced scientific skills should be a full comprehension of the social implications of their work. Enlightened professionals should have a solid grasp of ethics relevant to their activities. But, one can ask, what good will it do to nourish this moral sensibility and then place the individual in an organizational situation that mocks the very idea of responsible conduct? To pretend that the whole matter can be settled in the quiet reflections of one's soul while disregarding the context in which the most powerful opportunities for action are made available is a fundamental misunderstanding of the quality genuine responsibility must have." (pp. 304-305).

Perhaps in recognition of this condition a new plea should be added to the language of moral and legal defense. Now a person could plead not only "Innocent" or "Guilty" but

and distant beaches. My students and colleagues in scientific and technical fields have, by-and-large, found reading the book worthwhile. A number of them have told me that this way of addressing questions places their own concerns with social issues in a new light and that, whether or not they agree with the specifics of my interpretation, they have learned something from seeing technological phenomena examined in non-technical ways.

Others, however—certain top level administrators at the school where I teach—found the book insufficiently narrow in its focus to be of any true merit. Beyond that, they have evidently concluded that certain parts of my discussion are vile heresy that ought to be greeted in ways that established faiths have always greeted heretics.

In particular, these managers did not care for the argument that a person need not have a level of competency equal to the finest "state of the art" or "frontiers of knowledge" in a given field in order to be legitimate in talking about what developments in that field mean for society. In fact I argue that an intelligent, well-informed layman's understanding of a given technical field at issue will be good enough and that, in principle, any citizen ought to be capable of entering the debate about public concerns involving advanced technology.

That such views were found to be unacceptable sheds some light on what I take to be the true significance of the concept "technocracy" in our time. The issue is not, as generations of writers who have written about technocracy have believed, that a particular group—the scientific and technical elite—has gained a position of supremacy over other kinds of actors. No, that is not it at all. The proper meaning of technocracy has to do with the *credentials that one has to present in order to be legitimate* in entering public deliberations in the first place. Increasingly these credentials have to do with the kinds of expert knowledge one possesses. That is one's ticket of entrance. If one has data, sophisticated models, computer print-outs, and the evidence of vast research to show, then one has a rightful claim to participate. Otherwise, forget it. Technocracy,

then, is a condition of *citizenship* in which each of us enters public life not as an individual whole and full, but as a specialist with a few little things to say. It is at best an extremely cramped and shriveled conception of what our life as active members of a community, ought to be. But it is more and more the conception that prevails.

My book, in the judgment of some, goes far out of bounds in its desire to encourage others to think broadly about issues that are at once philosophical and political. In that respect, another common response to the book causes me no end of amazement and amusement. At the conclusion of the last chapter I suggest a little heuristic device that I hope will open the eyes of those now sleeping. I propose a modest experiment that I call epistemological luddism. The idea is simply that in a controlled and thoughtful way, individuals and groups occasionally un-plug from a technological system upon which they depend for their sustenance and/or comfort.

This is an experiment I do with my students all the time. I ask them to discontinue using the telephone, automobile, prepared food, or some other part of the daily technological environment for a week and see what happens. Those who take the experiment seriously (most do) almost always report learning a great deal about the world of social relations around them, about their own utter dependency upon things they neither know nor care about, and about their own sense of self as revealed by a slight disruption of their surroundings.

Now my reason for proposing this little experiment was to see how readers would respond to the suggestion that they temporarily do without one little part of the technological complex. My suspicion was that people would in fact be horrified by the idea and that in itself would tell us something about our relationship to the artificial world that we help produce and reproduce every day of our lives. How, after all, can one begin to think critically about technology and society if one is not prepared *even to imagine giving up one small piece*?

I was not, however, prepared for the response. Not only have reviews of the book been skeptical of or even hostile to my modest proposal, they have also systematically misunderstood what I intended in making it. Much to my amazement, conservative, liberal and radical reviewers alike have wanted to see "epistemological luddism" as a solution to the problems raised by the book. How wonderful!

The reason for this, it seems to me, has to do with the way people read nowadays. It is characteristic of our times that works of non-fiction are seen as containers of information or as tools for problem-solving. The first part of a book should describe a *problem*; the second part should offer a *solution*. That is the way many people have been trying to understand *Autonomous Technology*. In much the same way that fans of detective stories used to turn to the end to find out "who done it," many of my readers simply scan a few pages to get the general drift and then flip to the last chapter to see what my "solution" is.

Of course, they are bound to be frustrated. My book describes a series of *predicaments*, not problems. It offers a set of opportunities for *reflection*, not a set of pre-packaged solutions. One sign of the exaggerated position that modern technology has assumed in our lives is that writing and reading have themselves degenerated to become mere vehicles for factual information and technical problem-solving, rather than occasion for self-reflection and our imaginative reconstruction of the world.\*



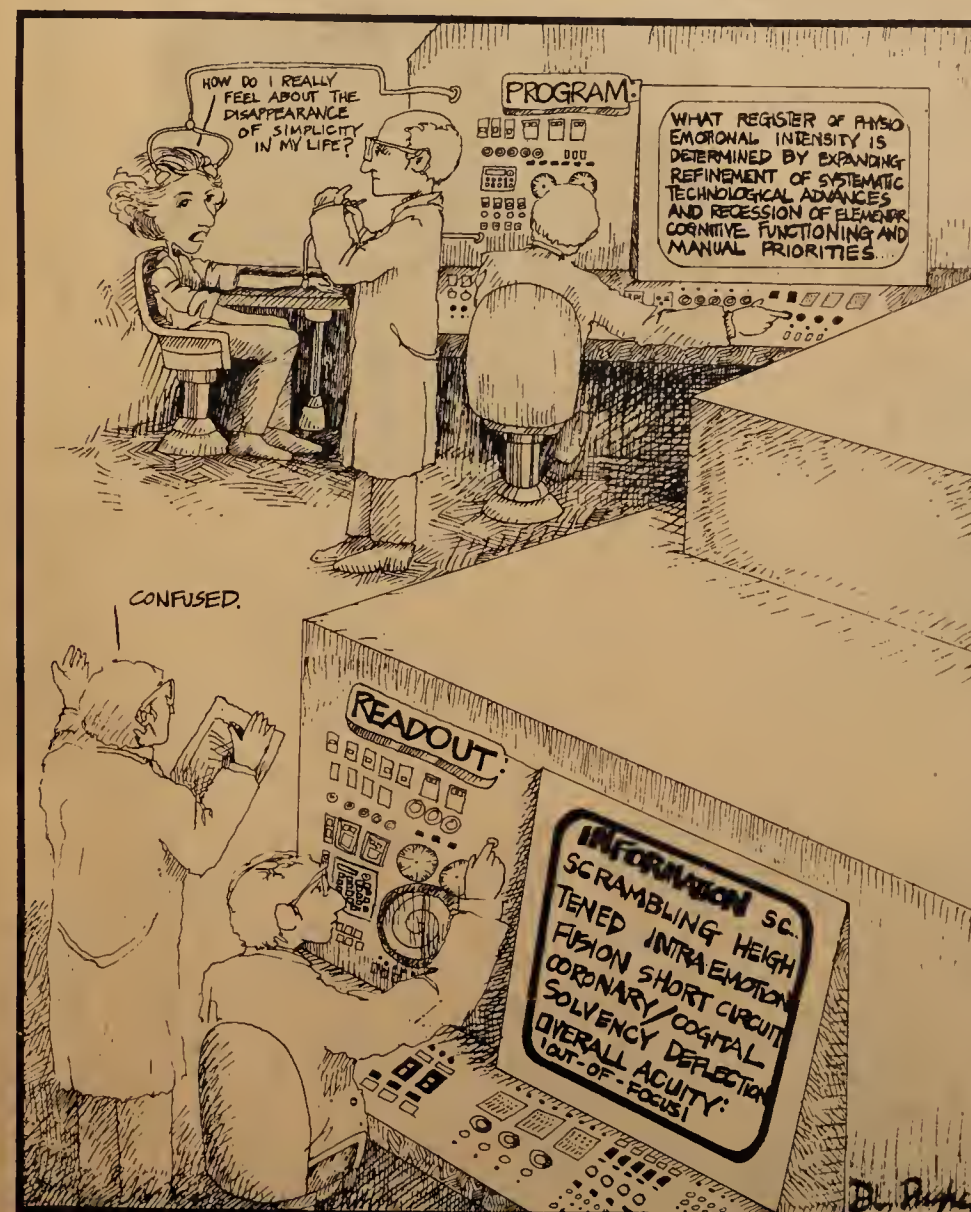
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